

CHAPTER 8

GEOTECHNICAL REPORT

8.0 GENERAL

The geotechnical report shall be the presentation of all data obtained during the investigation which includes the office survey, field check, boring logs, history of the location, all engineer's analyses, and recommendations. The variability in soil properties and its behavior along the road way could make those tasks challenging. Therefore, it is prudent upon Engineers to base the design recommendation on a combination of soil engineering judgment, hard data, field reconnaissance, etc. that truly reflects soil behavior, and the geotechnical analyses acceptable to INDOT. A copy of the geotechnical report shall be submitted.

8.1 EXECUTIVE SUMMARY

The executive summary shall include a concise summary of the major findings and recommendations of the investigation.

8.2 GENERAL INFORMATION

8.2.1 LOCATION

The location of the project; including the beginning and ending stations, project identification and the scope of proposed construction shall be described in the report.

8.2.2 DATES

The report shall include the date, month and year when the field investigation was performed.

8.2.3 SITE GEOLOGY

A general description of the geology and soils encountered on the project, and a description of the terrain, to include drainage, erosion patterns, high water elevation, flooding, and any other specific conditions which may be of value in the design of bridges, culverts and other structures.

8.2.4 OTHER INFORMATION

Any other information which may be of value for the proper interpretation of the field survey data shall be included within the report narrative.

8.3 EVALUATION OF THE SUBSURFACE CONDITIONS

This section of the report should include a thorough evaluation of the data collected in the field as well as in the laboratory. Summarize the findings, including ground water conditions, moisture content, soil types encountered, consistency and density, and any bedrock or unsuitable soils encountered on the project.

8.4 ENGINEERING ANALYSES

Describe here any engineering analyses that were performed for the project and the reasons for the analyses. For each analysis, a complete description of the parameters used, locations, and the specific boring information used in the development of the model for the analyses. The Consultant should specifically mention the area of the type of the problem, location of each model, boring logs used in each analysis, interpretation of the laboratory data, based on our findings, the problem areas should be identified, for each type of analysis. However, the actual data and the model should be included in the appendix of the report.

8.5 DETAILED GEOTECHNICAL RECOMMENDATIONS

The project shall be described by areas of similar soils and terrain features or conditions from the beginning of the project to the end. The soils of each area shall be generally described; specific problems or conditions shall be explained; and recommendations with the results of engineering analyses (where applicable) shall be made relative to any special embankment construction; cut slope recommendations in soil or rock; soil subgrade recommendations, subgrade removal, replacement, or treatment, some possible causes for the existing subgrade problems; removal of unsuitable soil; rock swell factors; drainage installations; the use of channel change materials, and/or any other factors affecting design or construction of the project. Any investigation of interchanges, S-lines and/or channel relocations shall also be a part of the report.

Whenever it is recommended to install field monitoring equipment and/or devices such as piezometers, settlement plates, and stakes, toe stakes, etc., the recommendations should include the purpose and/or objective, proposed locations, an approximate schedule as to the frequency of readings, controls which can be used during construction to assure proper performance based on the design assumptions.

8.6 SITE LOCATIONS AND BORING LOGS

GPS Coordinates should be provided for each boring location. Logs of all borings (including structure) shall be included in the Appendix of the Report. The logs shall be based on the field logs and laboratory test data. The logs shall contain all the information recorded on field logs as specified in Section 4.3, except the description of soil layers which shall include grain-size classification and AASHTO classification based on laboratory test data, and each soil layer shall be referenced to a laboratory sample number. A structure boring location plan view shall be included in the appendix of the Geotechnical Report.

8.7 TEST DATA

The results of all laboratory tests on various samples shall be tabulated and included in the Appendix of the Report. The tabulation shall identify each sample as to sample number, boring number, location and depth, and shall include all results obtained as described under Section 4.10. Separate tabulations shall be included for classification test results and strength test results. For construction of pavement subgrade evaluation form (as given in Appendix 10, Subgrade Evaluation) should be completed for each boring.

8.8 ENGINEERING ANALYSIS

The work described herein shall include review and correlation of various test results as to embankment stability, material placement and other geotechnical engineering considerations. Sketches, assumptions, calculations, etc., (where applicable) of all final engineering analyses and recommendations done as discussed in Chapters 5 and 6 shall be included in the Appendix of the Report. The source of the analysis, the input and output data (properly labeled) shall be provided if computerized analysis methods are utilized. The Consultant Geotechnical Engineer shall also attend all field checks, conferences, etc., as requested by INDOT. Methods of analysis shall have prior approval.

8.9 REPORT SUBMITTAL

At completion of the project submittal should consist of the following;

- Final Report should be in the form of a PDF document file
- gINT data file utilizing the INDOT data template
- MSE Wall Design Parameter and Geotechnical Check Table, if applicable (Appendix 12)